CASE STUDY

Cal FIRE Trains Elite Firefighters Using Extron DTP Systems and Annotation

Extron

Each of the Cal FIRE Training Center's divisible auditoriums includes an Extron DTP system. When the spaces are combined, the two DTP systems operate as a single presentation system.

The California Department of Forestry and Fire Protection (Cal FIRE) operates four state-of-the-art training centers located throughout California. They are used for year-round training in fire protection and prevention. The original and largest Cal FIRE Training Center (CFTC) is at their 420-acre campus near the city of Ione in Northern California. It provides advanced instruction for firefighters and other personnel in fire prevention, emergency response, and law enforcement related to fires. Firefighters are trained using the latest techniques, tools, and equipment, which includes AV technology.

The training campus includes core and ancillary learning spaces that offer in-depth instruction in technical equipment and realistic operational environments to conduct readiness training. Firefighter training incorporates simulations while equipped with advanced technologies and props within structures that include burn buildings and live fire scenarios. In addition to fires of every size, the curriculum encompasses first-response training for a wide range of emergency situations, including community and commercial space incidents, highway accidents, mud slides, rock falls, and other human-caused and weather-related events. Accepted trainees are already established with Cal FIRE and are often engineers.

Classroom instruction includes the ins and outs of fighting fires, from advanced study of types of fires and sand tables with live fire to chemical equations and hydraulics and fluid pump calculations. What the trainees learn in the classroom, they apply on the fire grounds for practical experience before graduating and returning to their station houses.

CHALLENGES

The 1967 training center was last remodeled in the mid-1990s. That project modernized the interiors and added conduit for basic integrated technology. Though not highly advanced, the existing AV system was plagued by performance issues and ongoing reliability concerns.

The current remodel saw refreshed interiors and an overhaul of the AV systems, with significantly enhanced technology and expanded capabilities. The CFTC consists of five large classrooms, various meeting spaces, and two auditoriums. Each room had to include an independent AV presentation system with high-performance AV switching, optimal image quality, dependable signal integrity over long distances, and user-friendly system control. The solution also had to be flexible and reliable. The plan called for use of the existing conduit, although cable pass-through space was limited; some rooms would require wall penetration.

The instructors had several requests for the new AV systems. A top request was to be able to annotate over video. Another wish was for augmented visibility, particularly to display a sand table from a variety of angles during live fire demonstrations.

A centralized equipment room enables AV signal distribution to all points within the training center.

“The Extron Annotator makes system usage effortless and intuitive, empowering users to focus on creativity rather than complexity.”

Teo Nguyen
Senior Systems Engineer/Programmer
AV Structural

The project had strict product availability and system installation requirements. It was to be completed within the year, and integration would run concurrent to ongoing training sessions without interfering with the schedule.

Cal FIRE brought in AV Structural of Concord, California who deployed an Extron solution of DTP® systems with live annotation and AV system control.

DESIGN SOLUTION

Structural modifications were made to facilitate installation of ceiling-mounted Panasonic projection systems, Samsung Pro wall displays, and additional sources, as well as upgraded AV systems. A shielded twisted pair cable infrastructure was installed to enable AV and control distribution throughout the space.

An Extron DTP system provides flexible signal distribution within each classroom, auditorium, and meeting space. Other Extron products in the space include a 4K/60 annotation processor, a ShareLink® Pro wireless gateway, and a TouchLink® Pro 10" touchpanel.

Four of the five classrooms support firefighter instruction and the fifth classroom is dedicated to law enforcement activities such as building code inspection and arson investigation. The two auditoriums are divisible, separated by a movable partition. When this wall is removed, the combined spaces create a large space for events and ceremonies. A DTP system supports each auditorium, and they operate as a single system to support the large room. Extron partition sensors automate AV system configuration based on the position of the movable-wall.

Because this mission-critical facility could not be taken offline, AV Structural worked at odd hours and piecemeal among the various training spaces to ensure minimal disruptions or downtime of any one room.

The combined rooms provide the ideal venue for events such as firefighter graduation ceremonies and citizens recognized for heroic contributions to safeguarding society.

DTP Helps Cal FIRE Teach How to Tame the Beast

The heart of each AV system is an Extron DTP CrossPoint® 8x6 seamless 4K-scaling presentation matrix switcher. It was deployed to manage the distribution of AV content, with Extron Vector™ 4K technology scaling video to match the native resolution of each display. The matrix switcher's eight inputs support a variety of sources, from computers to wired and wirelessly connected devices. The AV integrator selected a DTP CrossPoint model that also includes a 100-Watt 70 V audio amplifier, built-in control processing, and AV LAN. Having all these features and capabilities in one product streamlined the design, reduced project cost, and conserved valuable rack space in the central equipment room.

DTP transmitters and receivers extend HDMI signals at video resolutions up to 4K between room endpoints and the matrix switcher. The ShareLink Pro wireless gateway and at least one DTP transmitter are installed within the instructor lectern or credenza, and additional transmitters are installed around the room. The system designer chose a variety of transmitter models, basing the selection on features and form factor. An Extron four-input switcher with built-in DTP extension enables reliable signal transmission from connected source devices. At wall locations, a compact transmitter supports HDMI, control, and analog audio, while offering automatic input selection and discreet installation in tight spaces.

A DTP receiver is mounted with each display. It accepts DTP signals, converts them to HDMI, and supports device control while maintaining signal integrity. The DTP CrossPoint powers the receivers, as well as the DTP wallplate transmitters, over the twisted pair cable infrastructure, streamlining integration.

For easy system control, the Extron 10" TouchLink® Pro touchpanel at the lectern works in conjunction with the DTP matrix switcher's built-in control processor. The touchpanel gives the instructor seamless operation over source selection, displays, and audio, as well as activation of the annotation on-screen menu.

Extron Annotation Reinforces Lessons Learned

Cal FIRE instructors use the Extron Annotator 401 to add notes and highlight details in real time. This helps them drill down through complex subject matter such as chemical equations, pump pressure calculations, and arson analysis. Using a combination of touch, keyboard, and mouse selections from the intuitive on-screen menu, the instructor applies quick and easy annotations over the live video or presentation slides. The on-screen menu can be set to appear on any display.

Instructors have the option to discard or capture and store annotations to the processor's internal memory, Cal FIRE's campus network, or a flash drive plugged into the USB port on the unit's rear panel. Most instructors prefer to store annotations on their flash drive.

CFTC instructors use a touch screen connected to an Extron Annotator 401 to add notes and highlight key points over live video content.

“Extron Control Systems with provided certified drivers and toolkits helped me get the programming tasks done quickly and perfectly.”

Teo Nguyen
Senior Systems Engineer/Programmer
AV Structural

The integration team customized the annotation graphical user interface to a common look, facilitating easy transition between learning environments.

RESULTS

Cal FIRE has created their own one-stop shop for training first responders and other firefighting professionals. The successful implementation of Extron AV systems with annotation has significantly enhanced the CFTC learning environments. Faculty and trainees alike have found relief in the ease of use and reliability of the new DTP systems. Also, the uniformity of control interfaces across different rooms ensures a consistent user experience. Instructors can now focus on teaching rather than worrying about the technology.

The remodeled CFTC, with DTP systems plus Extron annotation and control, helps California grow its fire-fighting ranks and build the skills that save lives.

CAL FIRE TRAINING CENTER VIDEO LINKS

https://www.fire.ca.gov/what-we-do/fire-protection/training-center

“We were extremely happy to have been awarded the campus-wide audiovisual upgrade project for Cal Fire Training Center in Ione, CA. Since a local AV consultant group had created the Bid Specification, we were limited to making any major changes to the design. The specified manufacturer was experiencing issues with product availability, so we were freed up to recommend our go-to AV company, Extron. Once we got the go-ahead to provide a new turnkey design that would virtually replace system components in all areas except three conference rooms, we proceeded to procure the readily available products and deploy state-of-the-art Extron-centric AV systems in all classrooms and auditoriums. The systems couldn’t be any more robust!”

Tom Bustillos
General Manager
AV Structural

EXTRON EQUIPMENT - PARTIAL LIST

Model	Description
DTP CrossPoint 86 4K IPCP Q MA 70	8x6 Seamless 4K Scaling Presentation Matrix Switcher with 100-Watt 70 V Mono Audio Amplifier, AV LAN, and built-in control processing
Annotator 401	4K/60 Annotation Processor with USB Extension
ShareLink Pro 500	Wired and Wireless Presentation Gateway
DTP T SW4 HD 4K	Four Input HDMI Switcher with Integrated DTP Transmitter
DTP T HWP 4K 231 D	DTP HDMI Decorator-Style Wallplate Transmitter – 230 feet (70 m)
DTP HDMI 4K 230 Tx	DTP HDMI Transmitter – 230 feet (70 m)
DTP HDMI 4K 230 Rx	DTP HDMI Receiver – 230 feet (70 m)
TLP Pro 1025T	10" Tabletop TouchLink Pro Touchpanel – Black
ECM S10	Partition Sensor Set

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